

In the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

- 1        1. (Currently Amended) A data transfer controller comprising:  
2        a request queue controller capable of receiving, prioritizing  
3        and dispatching data transfer requests each specifying a data  
4        source, a data destination and a data quantity to be transferred;  
5        a data transfer hub connected to the request queue controller  
6        for receiving dispatched data transfer requests;  
7        a plurality of data ports having an interior interface  
8        connected to the data transfer hub which is so configured as to be  
9        the same for each data port and an exterior interface configured  
10       for an external memory/device which, in operation, is connected to  
11       said data port, the interior interface and the exterior interface  
12       being connected for data transfer therebetween;  
13       at least one transfer requestor node connected to said request  
14       queue controller and capable of supplying a data transfer request  
15       to said request queue controller;  
16       wherein the data transfer hub being capable of controlling  
17       data transfers from a source data port corresponding to the data  
18       source to a destination data port corresponding to the data  
19       destination in quantities corresponding to the data quantities to  
20       be transferred under a currently executing data transfer request;  
21       and  
22       wherein at least one of said plurality of data ports consists  
23       of an active data port connected to said request queue controller  
24       capable of supplying a data transfer request to said request queue  
25       controller specifying a data source, a data destination and a data  
26       quantity to be transferred.

1        2.    (Original) The data transfer controller of claim 1,  
2    wherein:  
3        said active data port capable of generating a data transfer  
4    request specifying said active data port as said data destination;  
5        wherein said data transfer hub generates a read command to  
6    said data source and transfers read data to said active data port.

1        3.    (Currently Amended) The data transfer controller of claim  
2    2, wherein:  
3        said data transfer hub generates a pre-write command to said  
4    active data port prior to transferring said read data to said  
5    active data port; and  
6        said active data port generates an acknowledge signal to said  
7    data transfer hub following receipt of said pre-write command when  
8    said active data port is ready to receive data.

1        4.    (Original) The data transfer controller of claim 1,  
2    wherein:  
3        said active data port capable of generating a data transfer  
4    request specifying said active data port as said data source;  
5        wherein said data transfer hub generates a read command to  
6    said active data port and transfers read data to said data  
7    destination.

1        5.    (Original) The data transfer controller of claim 4,  
2    wherein:  
3        said interior interface of said active data port supplies a  
4    read data command to said exterior interface of said active data  
5    port in response to read data command of said data transfer hub.

1        6.    (Original) The data transfer controller of claim 4,  
2    wherein:

3        said interior interface of said active data port includes a  
4        first-in-first-out buffer;  
5        said exterior interface writing data into said first-in-first-  
6        out buffer upon generation of said data transfer request by said  
7        active data port; and  
8        said interior interface supplying data read from said first-  
9        in-first-out buffer upon receipt of said read command from said  
10       data transfer hub.

1       7. (Currently Amended) The data transfer controller of claim  
2       6, wherein:

3       said interior interface of said active data port generates a  
4       stall signal to said exterior interface of said active data port  
5       when said first-in-first-out buffer is full; and

6       said exterior interface refrains from writing data into said  
7       first-in-first-out buffer upon receipt of said stall signal.

1       8. (Currently Amended) A method of data transfer comprising  
2       the steps of:

3       generating via at least one transfer requestor node data  
4       transfer requests each specifying a data source, a data destination  
5       and a data quantity to be transferred;

6       receiving, prioritizing and dispatching data transfer  
7       requests;

8       transferring data from a source data port selected from a  
9       plurality of data ports corresponding to the data source specified  
10       in a data transfer request to a destination data port selected from  
11       said plurality of data ports corresponding to the data destination  
12       specified in the data transfer request in quantities corresponding  
13       to the data quantities to be transferred specified in the data  
14       transfer request under a currently executing data transfer request;

15        wherein at least one of said plurality of data ports is an  
16        active data port; and  
17        generating a data transfer request at an active data port  
18        specifying a data source, a data destination and a data quantity to  
19        be transferred.

1        9.    (Previously Presented) The method of data transfer of  
2        claim 8, wherein:  
3        generating a data transfer request at an active data port  
4        specifying said active data port as said data destination.

1        10.   (Currently Amended) The method data transfer of claim 9,  
2        further comprising the steps of:  
3        supplying a pre-write command to said active data port prior  
4        to transferring said read data to said active data port; and  
5        supplying an acknowledge signal from said active data port  
6        following receipt of said pre-write command when said active data  
7        port is ready to receive data.

1        11.   (Previously Presented) The method of data transfer of  
2        claim 8, wherein:  
3        generating a data transfer request at an active data port  
4        specifying said active data port as said data source.

1        12.   (Original) The method of data transfer of claim 11,  
2        further comprising the steps of:  
3        writing data into a first-in-first-out buffer upon generation  
4        of said data transfer request by said active data port; and  
5        supplying data read from said first-in-first-out buffer upon  
6        receipt of a read command by from said active data port.

1        13. (Original) The method of data transfer of claim 12,  
2 further comprising the steps of:  
3        generating a stall signal when said first-in-first-out buffer  
4 is full; and  
5        refraining from writing data into said first-in-first-out  
6 buffer upon generation of said stall signal.

1        14. (Previously Presented) The data transfer controller of  
2 claim 1, further comprising:  
3        a plurality of transfer request nodes disposed in a chain  
4 having an upstream most node and a downstream most node, said  
5 downstream node connected to said request queue controller;  
6        a plurality of transfer requestor nodes each capable of  
7 generating service requests and each connected to a corresponding  
8 one of said plurality of transfer request nodes; and  
9        a special transfer request node connected to said upstream  
10 most node of said plurality of transfer request nodes and said  
11 active data port, said special transfer request node connecting  
12 said active data port to said request queue controller via said  
13 plurality of transfer request nodes.

1        15. (Previously Presented) The method of data transfer of  
2 claim 8, wherein:  
3        said step of receiving, prioritizing and dispatching data  
4 transfer requests is performed by a request queue controller;  
5        further comprising the steps of:  
6        transferring data transfer requests from each of a plurality  
7 of transfer requestor nodes to said request queue controller via a  
8 chain of a plurality of transfer request nodes having an upstream  
9 most node and a downstream most node, said downstream node  
10 connected to said request queue controller; and

11       transferring data transfer requests from said active data port  
12 to said request queue controller via a special transfer request  
13 node connected to said upstream most transfer request node.